

High Temperature Telemetry Transmitter for Venus Exploration, Phase II

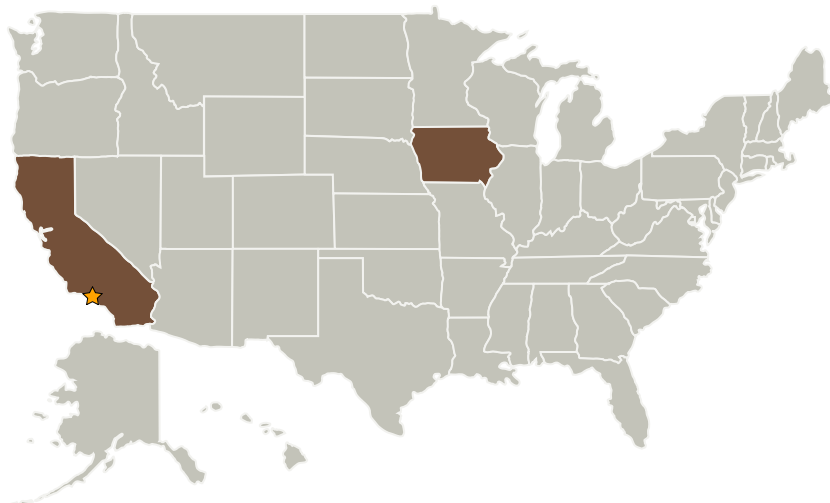
Completed Technology Project (2005 - 2007)



Project Introduction

The proposed S-band telemetry transmitter will operate in the exterior Venusian high pressure, 465°C ambient atmosphere without being contained in a thermally protective container. The sealed, radiation-hardened, high-reliability, silicon-carbide-based transmitter uses an ambient heatsink to cool its high temperature transistors without the power, volume, and weight of auxiliary cooling. An innovative circuit architecture requires only one SiC semiconductor device per module; other components are ceramic or temperature-compensated machined metal parts. Operating life on Venus is limited only by the external power source; several months is anticipated. The fault-tolerant modular transmitter's 150 watt RF output power will support a direct Venus-Earth 8 kbps communications link. This same design solution can also be applied to very cold Titan-like applications as well. The Phase II effort culminates with a 30 day Venus life test simulation of a full scale deliverable prototype.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Jet Propulsion Laboratory (JPL)	Lead Organization	NASA Center	Pasadena, California
Softronics Ltd.	Supporting Organization	Industry	Cedar Rapids, Iowa



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Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	2
Technology Areas	2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

California

Iowa

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.1 Optical Communications
 - └ TX05.1.3 Lasers